Trenton	W11414	40-14-36	74-45-36	29.1	53.8
Freehold	KRW414	40-13-39	74-17-45	49.3	56.3
Freehold	WIJ783	40-12-13	74-16-15	50.0	58.3
Bordentown	KSB669	40-08-50	74-42-35	27.3	60.0

The 41 dB□ contour was computed for a receiving antenna height of 30 feet above ground. However, the base station antennas of the land mobile licensees are well above that height. Therefore they are at much greater risk than the mobiles. So, in answer to the question: "Can it really happen?" we must answer that it appears that much the same thing has already happened.

SUMMARY REGARDING
A POTENTIAL DTV CHANNEL 16 NEAR NEW YORK

A review of the FCC rules shows that it is possible to locate a DTV station north of New York City by applying for a modification to an existing facility as detailed in §73.623(c)(2). This can be done by computing interference using the DTV *de minimis* interference criteria. It requires that interference be limited to a maximum of 10 percent of the viewing population of all protected stations in the area from the proposed station and all other stations in the area. While the Commission warns that this approach is difficult and time consuming, it leaves open the possibility for an applicant to pursue such an approach.

There is also another way. The DTV Allocation Table can be modified by applying the geographical spacing rules in §73.623(d) to the spacing between the site of the proposed station and all existing and proposed protected TV stations. Then an application can be applied for at that location. A preliminary assessment of this approach shows that it may be possible to use it north of New York City.

The example of channel 18 in Newton, New Jersey is used to show that an adjacent channel DTV station has already been assigned to an area nearby a city which is allocated for use by land mobile, and for which the potential for interference is very high.

Additionally, because channel 16 is not formally designated in the land mobile service, there is also the potential for an application to locate a low power, TV translator, or TV booster station in the New York metropolitan area. This would present substantial challenges to channel 16 land mobile Public Safety operations.

Thus, we conclude that it is necessary to take action to provide protection for the use of TV channel 16 by public safety in the New York City area.

FCC REQUIREMENTS FOR LAND MOBILE USE OF 470-512 MHz BAND

The FCC has technical rules in CFR 47 90.309 for the use of channels in the 470-512 MHz band in which channel 16 is located. These rules limit the close spacing, power, and transmitting antenna height of any land mobile facility and the close by TV transmitters that are co-channel and adjacent-channel to the land mobile use. For transmitters operating within the New York metropolitan area, there are significant hills and mountains that provide attenuation to potential interference signals. Therefore, it is appropriate to use the 40 dB protection provided by the maximum ERP in Table B of §90.309. In order to operate with no limitations on transmitter height and power, the Table shows that the co-channel spacing must be 130 miles or more. In addition, the adjacent channel spacing must be 67 miles or more as shown in §90.309 Table E. Limited use is allowed for spacings as small as 90 and 60 miles respectively.

PROPOSED CONTINUED LAND MOBILE USE OF CHANNEL 16

With the limitations that were imposed on land mobile usage when channel 16 was first proposed for the New York City area in 1994, successful coexistence has resulted. However, because of the existence of WNEP-TV in Scranton, Pennsylvania and WPHL-TV in Philadelphia, Pennsylvania, limitations were placed on the ERP of base and mobile units in Bergen County New Jersey that were more stringent than on systems east of the Hudson River and Kill Van Kull.[31] Experience has shown that these limitations effectively prohibit use of channel 16 west of the Hudson; therefore licenses in channel 16 west of the Hudson are non-existent. Consequently, only continued use of channel 16 by Public Safety agencies in New York City (all five boroughs), Nassau and Suffolk Counties is being proposed.

The possibility of interference to WNEP-TV and WPHL-TV was addressed when this channel was first proposed for land mobile use in 1994. Based on §90.309, the limitations on land mobile usage that were imposed at that time have resulted in successful coexistence. We propose that those limitations remain in effect. The proposed use of channel 16 west of the Hudson River and Kill Van Kull is therefore limited to 225 Watts at an antenna height of 152.5 meters (500 feet) above average terrain. We also propose that adjustments of the permitted ERP be allowed when in accordance with the "169 km Distance Separation" entries in Table B or permitted by Figure B of §90.309(a)(5) of the FCC rules.

[31] For base stations in Bergen County this limitation was to entries specified in Table B or prescribed by Figure B in §90.309 of the FCC Rules for the actual separation distance between the land mobile base station and the transmitter site of WNEP-TV, Scranton PA. For mobiles in Bergen County this limitation was 10 Watts ERP .

CHANNEL 16 AVAILABILITY

Under the Commission's Order permitting temporary use of channel 16 for public safety communications, the Commission established the parameters of its operations, which are set forth in Appendix 4 (pp 39)(hereinafter referred to as "parameters"). These parameters generally follow the premise of the methodology used by Subpart L of Part 90 of the Commission's rules, Authorization and Use of Frequencies by Land Mobile Stations in the Band 470-512 MHz in certain Urbanized Area, but are structured to comport with use by public safety and non public safety entities in the New York Metropolitan area.[32] This technical analysis is based on the ability to place channel 16's public safety communications infrastructure within the New York Metropolitan area consistent with the parameters.

The TV stations close to New York City have been compiled from the FCC database, and were shown in TABLE 5. The great-circle distance to these TV stations from the coordinates of New York City was determined, and is shown in that TABLE. The adjacent channel requirement between full power and height land mobile base stations and full service TV stations in this band is listed in 47CFR§90.309 table E as 108 km (67 miles). The land mobile base stations can be up to 80 km (50 miles) from the coordinates of the city. So, the minimum distance from the city center to any TV station should be 108 + 80 = 188 km (117 miles). The existing adjacent channel 15 stations in this TABLE 5 all meet this requirement. The channel 17 stations are another matter indeed.

WPHL-TV channel 17 interference was originally addressed by the Commission when channel 16 was proposed for use by land mobile in the New York area. The allowed power and height were adjusted so that interference to WPHL-TV would not occur, and satisfactory performance has resulted over the years of operation. There is a present agreement with WEBR-CA channel 17 and this review addresses this circumstance in more detail. We do anticipate significant interference from the proposed operation of W17CR to nearby base stations in Nassau and Suffolk counties. This interference situation must be dealt with by the Commission.

W17CD in Stamford, CT is close to New York City as shown in TABLE 5, and even closer to the Suffolk County Police Department (SCPD) sites. However, it is a translator radiating most of its 100 kW ERP east by north east. Never-the-less, because of its close proximity to SCPD sites operating within the Commission's parameters; it has the potential to cause significant interference. Should they receive authority to go on the air, they too will be a problem for the Public Safety land mobile stations nearby.

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[32] *In the Matter of Waiver of Parts 2 and 90 of the Commission's Rules to Permit New York Metropolitan Area Public Safety Agencies to use Frequencies at 482-488 MHz on a Conditional Basis*, FCC 95-115, 10 FCC Rcd 4466, at Appendix (March 17, 1995)

The co-channel separation requirement for full height and power land mobile base stations to full service TV stations is given in 47CFR§90.309 Table B as 209 km (130 *miles), and adding as before the minimum separation between the city center and the TV* station is 209 + 80 = 289 km (180 miles).

WQEX channel 16 in Pittsburgh, PA meets this criterion, but the channel 16 stations WNEP-TV in Scranton, PA and W16AX in Ithaca, NY do not. But, they do not need to do so. The range of land mobile base stations and mobile radios in the direction of these co-channel stations is limited by the Hudson River, and is 153.1 km (95.1 mi.) and 273.1 km (169.7 mi.) respectively. So, W16AX in Ithaca, NY does meet the 209 km actual separation requirement for full power and height stations. WNEP-TV was originally addressed by the Commission, and the allowed land mobile power and height were reduced so that stations east of the Hudson River and Kill Van Kull do not interfere with WNEP-TV. We will now address channel 16 W11BJ in Hartford, CT.

POTENTIAL W11BJ INTERFERENCE TO SCPD

The analysis herein will show that TV station W11BJ will cause significant interference to existing public safety communications within the New York metropolitan area. They do this by interfering with the reception of signals transmitted from mobiles and portables as received at a base station antenna. This section uses Longley-Rice path loss values[33] to estimate the interference potential of TV channel 16 W11BJ transmissions to SCPD base station receivers that have been placed throughout the County consistent with the Commission's parameters. The map of Figure 3 shows Suffolk County and W11BJ. The TV station is located at Latitude 41-42-13 N, longitude 72-49-57 W, with its antenna center 274 feet above local ground level and an ERP of 275 Watts as determined from the FCC CDBS Public Access data base.

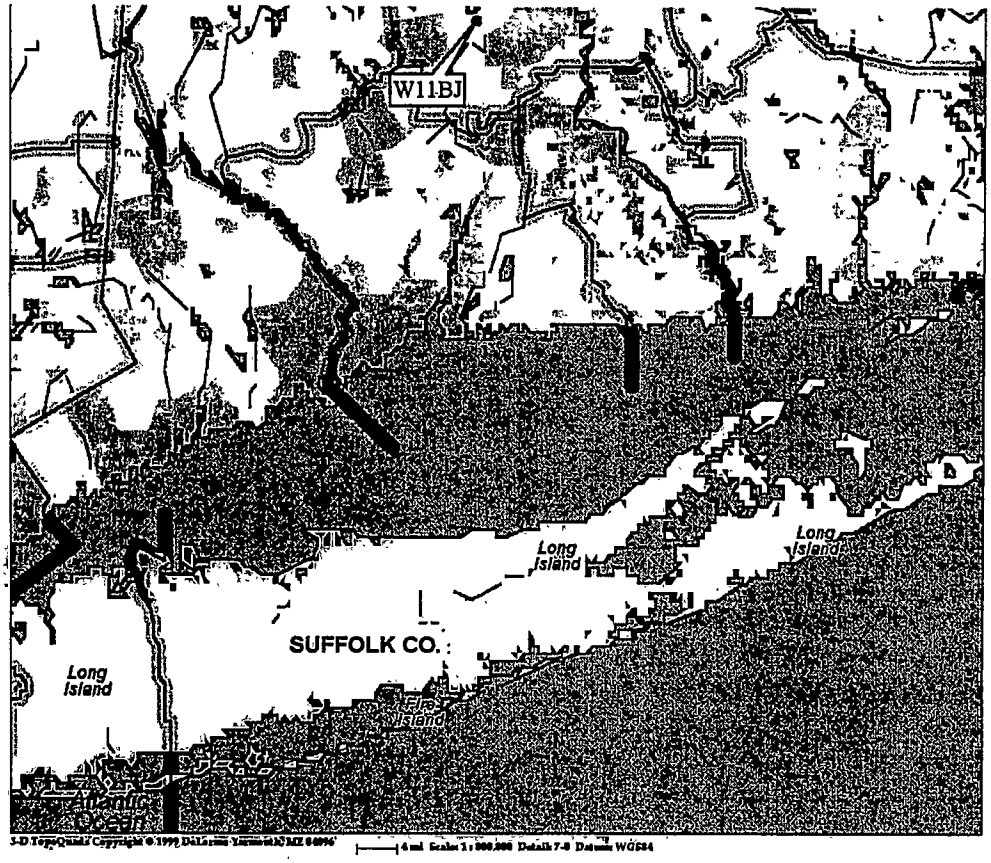


Figure 3 Location of SCPD Public Safety Base Stations at risk to interference from proposed channel 16 operation by W11BJ in Hartford CT, shown.

[33] G. A. Hufford, A. G. Longley, and W. A. Kissick, "A Guide to the Use of the ITS Irregular Terrain Model in the Area Prediction Mode," NTIA Report 82-100, April 1982.

Figure 4 shows the elevation profile between a typical SCPD site and W11BJ. This profile has been drawn so the path of a radio wave will be a straight line, and it clearly shows that there is not a direct line-of-sight path between the W11BJ transmitting antenna and the SCPD base station receiving antenna. This is also true for the other sites; thus the choice of the Longley-Rice propagation model is appropriate.

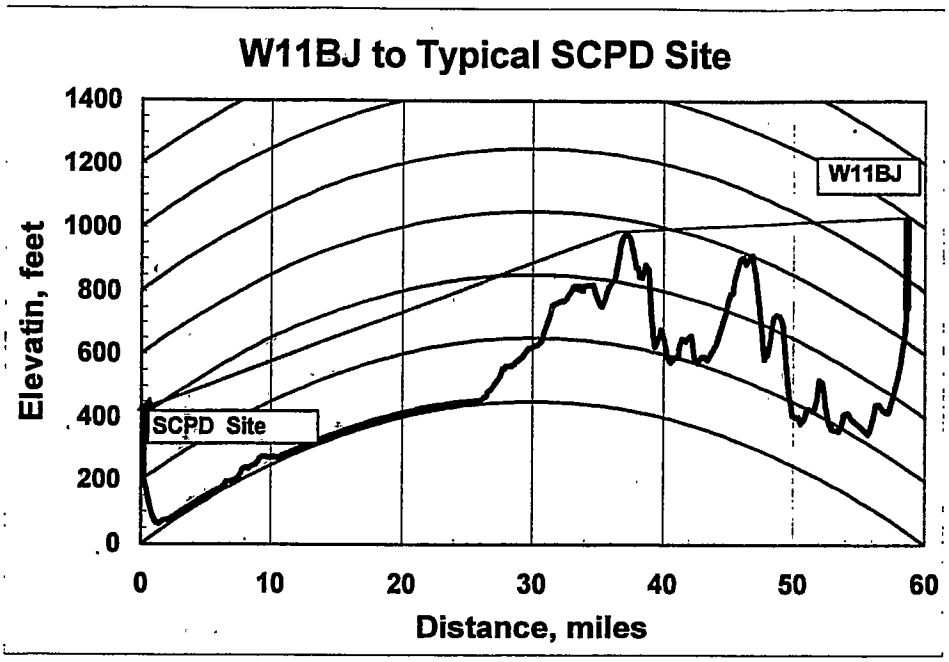


Figure 4 Elevation profile between W11BJ and a typical SCPD site.

W11BJ is directional, and Figure 5 shows the relative electric field horizontal pattern of the antenna. The ERP in the direction of the SCPD sites is modified by the directivity as shown here. Distance and heading values are calculated using a great circle navigation program, and the magnitude of the horizontal pattern in the direction of specific SCPD sites is determined from the heading and this pattern.

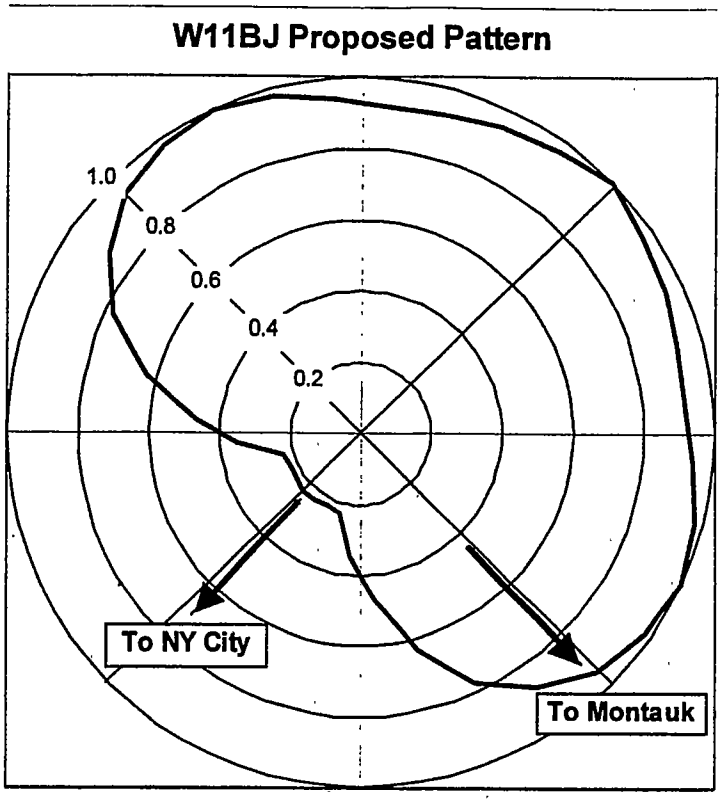


Figure 5 Electric field horizontal pattern of W11BJ showing the span of directions to SCPD sites to the south.

In order to compute the interference, the ERP must be adjusted based on frequency offset from the visual carrier. For this, the maximum level reached ten percent or more of the time in over-the-air measurements of a typical TV station in Chicago, IL has been used. A graph of that spectrum, normalized to channel 16, is shown in Figure 6.

The value of Longley-Rice path loss is taken as the value exceeded at least 10% of the time for 10% of the "situations". Three SCPD sites, (#1, #2 and #3) have interference levels exceeding –123 dBm, the noise floor usually associated with land-mobile receivers. These receivers have 0.25 μV sensitivity, at 12 dB static SINAD audio quality and 4 dB signal-to-noise ratio. It is noted that noise-like interference (expressed as power, not dB) adds to the noise floor. So, received interference at –123 dBm doubles the equivalent noise, resulting in a net 3 dB degradation in sensitivity. Thus, the interference at these three sites causes degradation in excess of 3 dB.

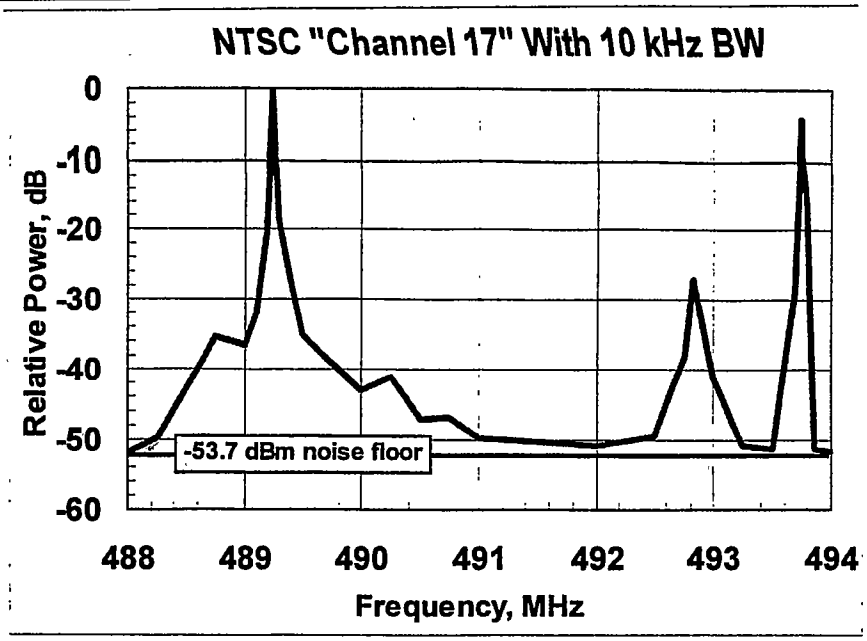


Figure 6 Typical NTSC spectrum observed with 10 kHz resolution bandwidth at the point where 10 percent of the observations are greater (90 percent are smaller) than the values indicated.

At large distances from a base station, it is typical to use 12 dB as the gain necessary to double the geographic range of a signal. However, at shorter ranges, a more typical number is 10 dB.[34] This is used in the analysis in TABLE 7 to quantify the interference for the three sites and the reduction in coverage area. The sum of the factors from the ERP to the receiving antenna and coaxial cable net gain yields the received interference. That interference plus the noise floor, compared to the noise floor alone, is then used at 10 dB per octave to determine the column of percent coverage area remaining.

This represents a severe reduction in coverage when over 70 percent of the coverage from one site is placed at risk. If this is allowed to happen, it will place life and property at severe risk in the areas affected. Additionally, it must be noted that this is not the only source of interference that may be present in the area of the SCPD sites. There is potential interference from a newly approved low power TV station on channel 17 W17CR in Plainview, New York that was noted in TABLE 5 in an earlier section of this report. Out of band transmissions from that source will also add to the noise and interference from W11BJ and potentially make the situation even worse.

[34] This is the factor for the Okumura propagation curves in the range of 1 to 20 km with a mobile antenna 1.5 meters above ground and a base antenna 61 meters above ground.

TABLE 7
Range Reduction To SCPD Sites Due To Interference from W11BJ

SITE	ERP dBm	Antenna Patt. dB	TV Freq. Resp. dB	Longley Rice dBd	Rx Ant & Coax, dB	Net dB Interference	Remaining Coverage
SCPD Site # 1	54.4	-6.0	-34.7	-132.5	4.0	-114.8	29 %
SCPD Site # 2	54.4	-2.6	-31.0	-139.9	4.0	-115.1	33 %
SCPD Site # 3	54.4	-2.0	-35.4	-140.6	4.0	-119.6	50 %

WEBR-CA CHANNEL 17 MEASUREMENTS

WEBR-CA channel 17 broadcasts from the TV channel adjacent to the NYMAC members. Its transmissions are particularly important to use by the NYPD and other agencies now, as well as in the future build-out by Public Safety agencies in channel 16. WEBR-CA radiates a maximum ERP of 1.07 kW circularly polarized (equal power of 1.07 kW in both horizontal polarization and vertical polarization) with a horizontal cardioid-like antenna pattern[35] shown in Figure 7 that points to the northeast. The vertical pattern has a half-power (3 dB) beamwidth of 2.5 degrees and it is down tilted 2.5 degrees as shown in Figure 8. The antenna is mounted on the side of the Empire State Building with a RCAMSL of 322 meters. There is building blockage in the direction of the backlobe in the horizontal antenna pattern.

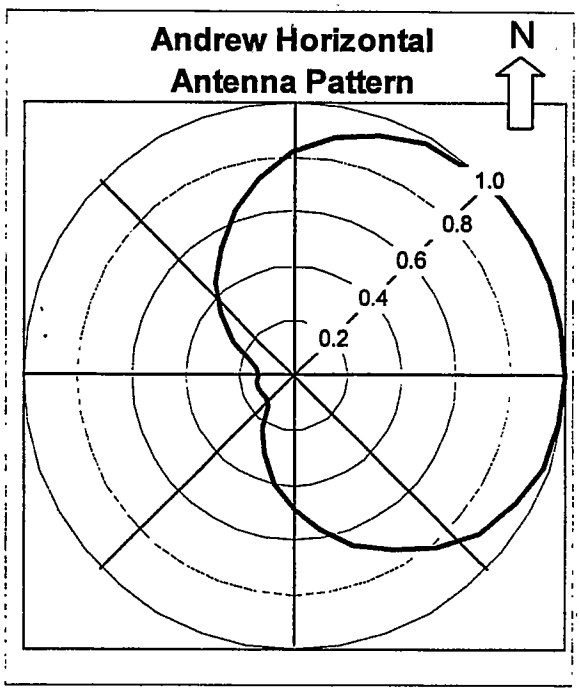


Figure 7 Relative horizontal field pattern of WEBR-CA on channel 17.

There are many base receiving sites on TV channel 16 that NYPD has installed throughout New York City, a map of which appears in Figure 9. The Empire State Building is also plotted on this map. It is evident that there are many NYPD sites that

[35] This pattern, as well as the vertical pattern to follow is read from ENGINEERING STATEMENT PREPARED IN SUPPORT OF MINOR AMENDMENT OT LPTV DISPLACEMENT APPLICATION WEBR CA CHANNEL 17Z K LICENSEE, INC. PBTTL-19991201AAP MANHATTAN, NEW YORK, September 2000, updated 3-20-2002, WEBR Figure 1B (for vertical polarization) of the ANDREW ALP16L10-CSER-17 antenna. The slight non-symmetry suggests the pattern may be measured. This is not the horizontal pattern nor antenna model that is shown in the FCC CDBS public access database, but we are assured by WEBR-CA that it is the antenna and pattern that is in use.

are in the direction of the main beam of the WEBR-CA horizontal antenna pattern and that are very close to the WEBR transmitter.

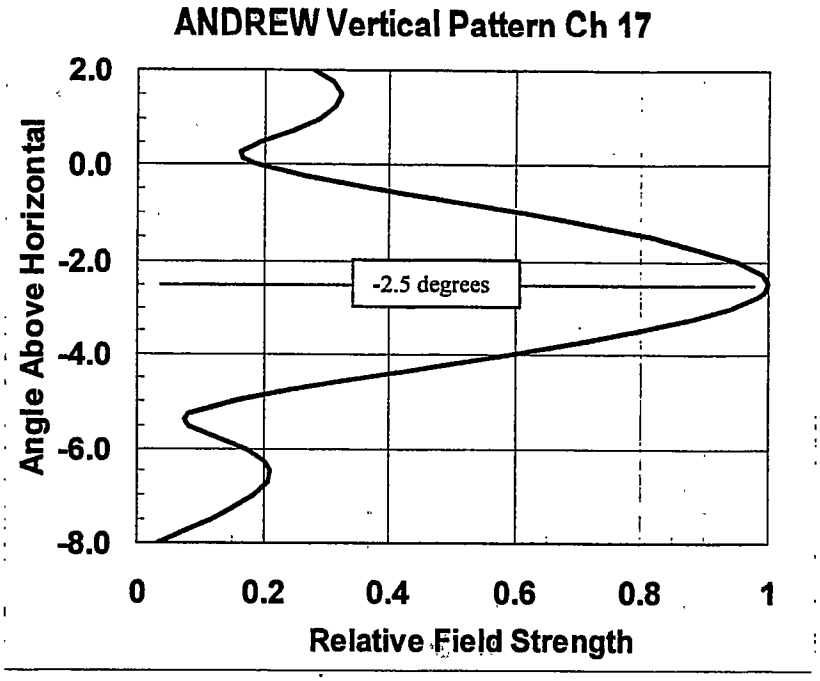


Figure 8 Relative Vertical field pattern of WEBR-CA on channel 17.

There is the potential for interference from splatter outside of the TV channel 17 band of WEBR-CA into the receivers of NYPD that occupy TV channel 16. For that reason, it is necessary to quantify the level that may be occurring at the present time. An estimate can be made with computations, but this must ultimately be done with measurements.

COMPUTED NOISE LEVEL

The advertised ERP of WEBR-CA[36] is 1.07 kW, but this is in the direction of the horizon from their location at an elevation of 322 meters on the Empire State Building. The radio horizon is reported to be at an angle down from the horizontal by 0.49 degrees, and it is at that angle the ERP of 1.07 kW is quoted. The magnitude of the vertical field pattern at 0.49 degrees below the horizontal is quoted as 0.3803. This is 8.39 dB below

[36] The ERP and other technical details are taken from Engineering Statements made in support of WEBR-CA by Clarence Beverage of Communications Technologies Inc. This material is contrary to technical information obtained from the FCC CDBS public access web site, and the license issued to WEBR-CA. However, Mr. Beverage assures us that this is the correct information. The FCC shows the ERP to be 2.0 kW, the polarization to be horizontal, and the horizontal antenna pattern is different as is the antenna model number.

the main-beam maximum, and when the 1.07 kW is increased by 8.39 dB the resulting maximum ERP in any direction is 7.40 kW. This value is modified by the directivity in the direction of the NYPD station under consideration.

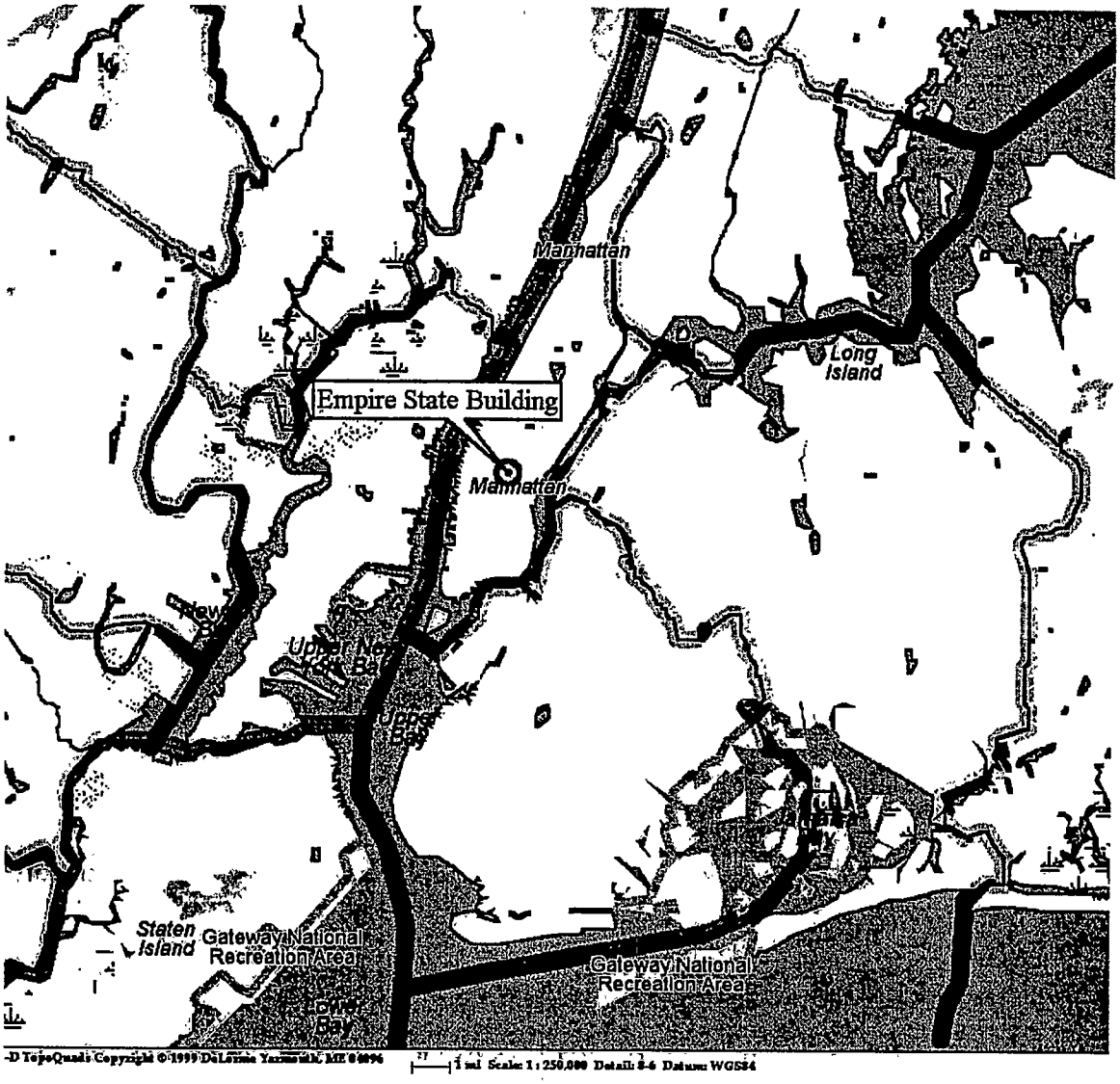


Figure 9 NYPD base stations (transmitter and receiver) that use frequencies in the 6 MHz of TV channel 16 are located throughout New York City, consistent with the parameters established by the Commission.

(Coordinate datum NAD83/WGS84. Distance in km from Empire State Building coordinates N40-44-54.35 W73-59-8.53).

The other factor that must be considered is the radiated energy outside of the channel 17 band into channel 16 where the NYPD receivers are located. Measurements of a typical

NTSC transmitter signal have been made in-band with a spectrum analyzer as shown in Figure 10. Then, an estimate was made of the out of band emissions of a potential low power TV transmitter; it is also shown in Figure 10. This estimate is purposely made so that the interference resulting is probably high, but it can be used until the measurement program is completed and the actual field results are known.

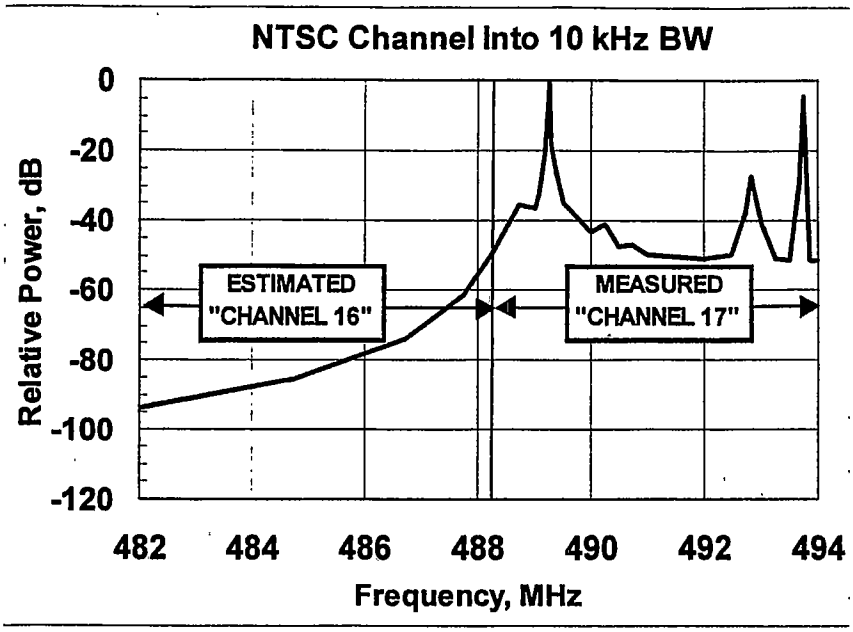


Figure 10 Potential interference power that may be produced by WEBR-CA based on the 10th percentile highest values measured on an NTSC signal in band.

Because of the height of the Empire State Building, and the tall NYPD receiving sites, the free space propagation model is appropriate. The antenna at the NYPD receiving site is omnidirectional, and we will use a 7 dBd gain antenna and 3 dB of transmission line loss to bring the signal down to the receiver. Using this, and the other parameters described above, the level of the interference received by each NYPD station examined was computed by summing the gains and losses in dB. The results are shown in TABLE 8, and NYPD Site # 4 is highlighted as the computed worst case site

A noise floor of –123 dBm establishes sensitivity for typical land mobile equipment with a 15 kHz IF. Thus, we see that there is the potential for significant interference at almost all the sites. The lowest level is at a site that is protected by being in a null of the vertical pattern and being over 2 ¼ MHz away from the band edge of WEBR-CA.

However nulls in an antenna pattern are known to be difficult to predict, so this may well be higher.[37]

TABLE 8
Computed Base Receiver Interference to NYPD From WEBR-CA

	ERP dBm	Patt. Loss	Splatter Attn.	Path Loss	Rx Sys Gain	Received Pwr dBm
NYPD Site # 1	67.4	-0.2	-74.1	-98.1	4.0	-101.0
NYPD Site # 2	67.4	-0.9	-79.4	-92.9	4.0	-101.8
NYPD Site # 3	67.4	-8.2	-77.9	-83.7	4.0	-98.4
NYPD Site # 4	67.4	-0.8	-68.5	-95.4	4.0	**-93.2**
NYPD Site # 5	67.4	-29.0	-80.0	-85.8	4.0	-123.3
NYPD Site # 6	67.4	-17.6	-76.4	-85.9	4.0	-108.5
NYPD Site # 7	67.4	-1.8	-65.8	-100.2	4.0	-96.3
NYPD Site # 8	67.4	-2.5	-62.8	-102.1	4.0	-95.9
NYPD Site # 9	67.4	-3.8	-68.8	-103.8	4.0	-105.0
NYPD Site # 10	67.4	-2.8	-71.5	-102.2	4.0	-105.1

Recently the FCC issued a construction permit for a channel 17 low power 1 kW maximum ERP TV station W17CR to be located in Plainview, New York.[38] Should this station be constructed, it is anticipated that there will also be similar interference to public safety land mobile operations from this source. Further, the noise power from this station will add to the interference already present from WEBR-CA and the other sources described herein.

MEASUREMENT METHODOLOGY

The above indicates that current and future uses of channel 16 as it relates to WEBR, raises questions, calling for additional measurement and analysis. Since they are close to the WEBR-CA transmitter, it is recommended that the signal received at all ten NYPD

[37] It is well known in the antenna industry that a null is made up of the sum of the contributions from each radiator when they add out of phase. Thus, computed nulls are often in error by over 10 dB.

[38] Construction permit issued to CATHOLIC VIEWS BROADCASTS, INC, file number BMPTTL-19990917AAN, grant date August 19, 2002

sites be measured. The goal is to produce a cumulative distribution of the received signal on 20 land mobile channels spaced approximately equally over the channel 16 TV band at each site. However, these measurements must be made on frequencies that are not presently occupied by NYPD or by any other nearby public safety facilities. Vogel Consulting Group has been supplied a list of frequencies that are occupied by NYPD, and that are used for mobile data applications in the channel 16 TV band and are plotted in Figure 11. It is evident that exact equal spacing cannot be maintained, but a suggested list of frequencies which are not in use and are unoccupied by NYPD, were also examined. Channel 16 licensed frequency lists have also been obtained from Nassau County and Suffolk County, and the frequencies examined do not appear on their use lists. However, they should be checked with any other potential sources to determine that they are in fact not being used by others, before the measurement program is initiated.

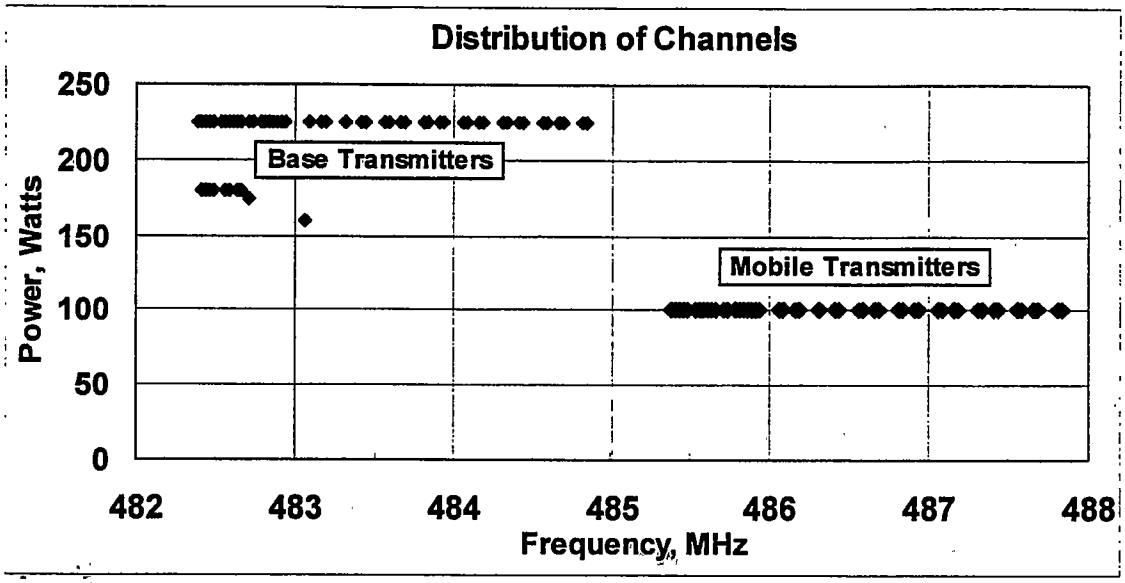


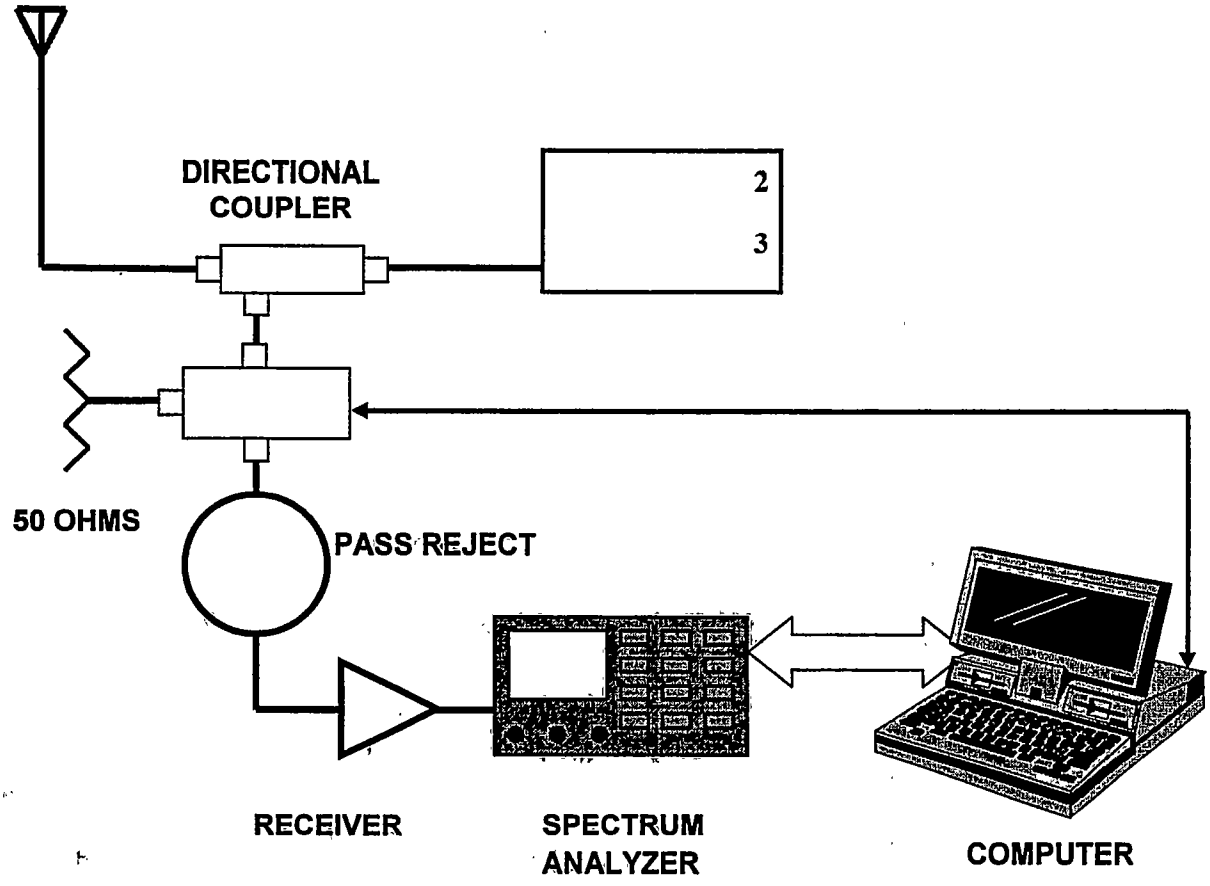
Figure 11 Licensed ERP of transmitters of NYPD that are in the TV channel 16 frequency band.

Measurements will be made over a minimum of 24 hours at each site. A spectrum analyzer will be used to make the measurements; one with a computer port is necessary so that the measurement can be automated by using a computer where the data can be stored for processing. An Agilent model E4401B or equivalent is suggested. The proposed measurement configuration is shown in Figure 12. In addition to the computer and spectrum analyzer, a directional coupler is necessary to couple energy from the antenna transmission line. Assuming that a one-day reduction in receiver sensitivity of 3.5 dB[39] is allowable, a 3 dB directional coupler should be used so there will be adequate

[39] A 3 dB reduction in receiver sensitivity is usually just perceptible to personnel in the field, so this should not be objectionable for the period of the test.

signal to provide the dynamic range necessary in the measurement. Any of the 50 Ohm 3 dB directional couplers made by Narda or HP and that function over the 482 to 488 MHz bandwidth of the measurement should be adequate. If the coupler has a fourth port, that port should be matched with a 50 Ohm load.[40]

Protection of the spectrum analyzer from the picture carrier of WEBR-CA is necessary, and a notch filter such as the Radio Frequency Systems (RFS)[41] 1155 can provide isolation. In order to reduce the noise floor of the measurement and provide additional protection, a receiver multicoupler is shown. The RFS RMC460 series is acceptable. Finally, in order to record the noise floor of the measurement system, a separate 50 Ohm load is to be provided along with a computer controlled RF switch. The computer can then switch between the antenna coupler and the load to provide this measurement.



[40] If the site is equipped with a receiver multicoupler, and a spare port is available, it can be used. Then the directional coupler can be deleted from the measurement system.

[41] Radio Frequency Systems was formerly known as Celwave.

Figure 12 Measurement configuration integrated into site receiver equipment

To maximize sensitivity and match the selectivity of base station receivers as closely as practical, spectrum analyzer resolution and video bandwidths of 10 kHz each should be used. To prevent overloading of the spectrum analyzer, the WEBR-CA video carrier power at 489.25 MHz should be conservatively maintained under –20 dBm (1 dB gain compression is specified as 0 dBm for the E4401B analyzer). Frequencies should be programmed into the analyzer in a circular fashion at a rate of one per second and measurements taken using a zero frequency span. This will produce 86,400 measurements per day (4320 measurements per frequency per day). Data collection must cover at least one full day. Confirmation that WEBR-CA is the source of the observed power can be made through comparisons of the average signal level just before and just after transmitter shutdown or turn-on.

The gain and/or loss of each component above will be recorded before the measurements are initiated. Then, at each location, document the type of antenna being used, the type and length of transmission line being used, and if possible take a picture of the antenna with the Empire state building in the background. If it is not possible to show the Empire State Building in the background, note the building that prohibits direct line of site so it can be pointed out in the report. Note the date and time the data taking started and when it ended, and the frequencies on which data was taken.

It is recommended that the first measurements be made at a site most impacted by WEBR-CA. This would be a site located close to the Empire State Building and the NYPD antenna at this location is in both the vertical and horizontal pattern main beam of WEBR-CA. So, it has the potential to receive the largest signal from WEBR-CA.

PRELIMINARY RESULTS

Measurements have been made at the first measurement site on isolated frequencies using a 15 kHz IF tunable receiver with external tuned band pass and band reject filters. The latter rejected the high power carrier of WEBR-CA channel 17 to eliminate desensitization of the receiver, and the band pass filter was used to reject other sources of noise in nearby frequencies. A multicoupler adjusted for 0 dB net gain was available at the site with a spare port, so the 3 dB directional coupler was not necessary to obtain the signal. There was about 200 feet of ½ inch foam coaxial cable (attenuation 3.04 dB at 500 MHz) attached directly to a 5 dB omnidirectional co-linear antenna. The receiver and filters were tuned to a particular frequency and the magnitude of the signal was noted on the meter of the receiver. Then a matched adjustable calibrated signal generator was used by substitution to bring the meter on the receiver to the same reading as the "noise". The magnitude in dB was then recorded.

By removing the band stop filter attaching the antenna directly to the receiver and using appropriate attenuators the video and aural carriers were also measured, again using substitution. The results are shown in Figure 13 superimposed on the spectrum used by the NYPD.

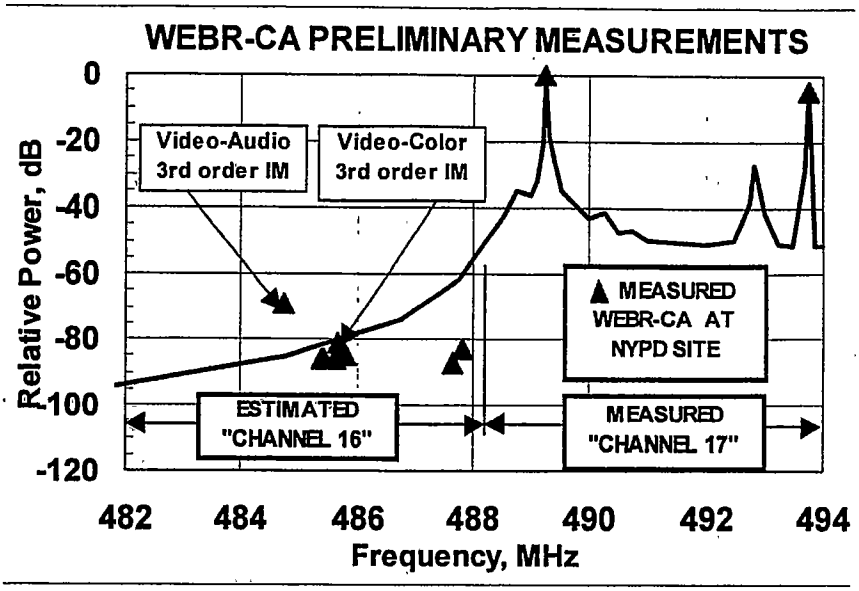


Figure 13 Preliminary measurements of WEBR-CA channel 17 signal into a receiver at the NYPD site at first measurement site normalized to the Video Carrier.

The worst-case received interference measured –99 dBm at the measured UHF frequency. This is an increase of 24 dB from the ambient noise level in the land mobile receiver. A third order intermodulation product from the video and audio carriers of channel 17 occurs at this frequency. A third order product from the video carrier and the color sub-carrier of channel 17 also occurs within the 15 kHz land mobile IF centered at another frequency within channel 16. Interference at this frequency measured –111 dBm, and it produces an increase of 7.8 dB in the noise plus interference in the receiver. Other measurements near the latter frequency resulted in interference between –114 and –116 dBm.

The 10 dB per octave range reduction developed above translates these interference levels to reductions in area covered. The –99 dBm interference level reduces the coverage area of the channel at that location by 96.5 percent leaving only 3.5 percent of the area covered. The –116 dBm interference level reduces the coverage area by 66 percent leaving only 34 percent of the area covered.

By good design, the worst case frequency measured above is not in use by NYPD. But frequencies that are in use appear to have less than 35 percent of their potential area of

coverage remaining. However, detailed measurements are necessary to confirm this conclusion.

PRELIMINARY MEASUREMENT CONCLUSION

The preliminary measurements indicate that there is a severe reduction in coverage area of the NYPD site at the impacted site of frequencies that are in use. Should the levels be confirmed by further measurements, continued degradation of the noise floor by interference may lead to severe consequences when coverage and capacity is strained in an emergency.

CONCLUSION

A search has been conducted to find spectrum to permit the NYMAC public safety members to implement needed improvements in their communications systems. None could be found to satisfy the present need. The continued use of channel 16 was investigated, and it is found that there are potential problems that must be addressed.

It has been shown that the FCC rules permit the implementation of a new channel 16 DTV station in the New York City area co-channel with existing Public Safety land mobile stations that can cause interference. In fact, an adjacent channel station has recently been issued a construction permit near Philadelphia, PA that will probably cause interference to properly licensed land mobile stations within the land mobile allocation to Philadelphia.

Also W17CR channel 17, though not analyzed in detail, will probably produce interference to nearby public safety base stations as it was shown in the case of WEBR-CA channel 17 similarly sited. The interference from the recently issued construction permit to channel 16 W11BJ, if implemented, is shown to have the potential to reduce the area of coverage of one Suffolk County Police Department station to only 30 percent of the area presently covered.

Preliminary measurements at one New York Police Department site have shown the interference from channel 17 WEBR-CA to be reducing the area of coverage of channel 16 frequencies in use at that site to less than 35 percent of what it would be without the interference present.

Therefore, we request that the Commission permanently reassign TV channel 16 to the use of land mobile communications for the public safety community in the greater New York metropolitan area.

FREQUENCY (MHz)	# OF CSN	# OF MOBLS	CO-CHAN DIST(mi)	DIR. Deg.	CALL SIGN	STATE	ADJ DIST(mi)	DIR. Deg.	CALL SIGN
BEST USEABLE FREQUENCIES - VHF BAND									
153.5300	3	240	29.72	290	KED793	NJ	1.17	38	WPLX726
151.6700	1	0	27.9	204	WPMK746	NJ	0.59	44	WNUJ744
151.0250	5	340	26.41	7	WNLF882	NJ	11.78	312	WNRM842
154.6100	1	0	22.17	353	WPOX628	NY	0	156	WPLP823
159.6900	4	620	18.99	47	WPMV662	NJ	4.9	261	WPQK983
153.5450	7	130	17.21	81	WRY348	NY	13.88	94	WPPT453
151.4000	4	95	14.75	25	KNBI425	NY	4.61	238	KNGC323
151.1900	4	0	13.33	306	WRA626	NJ	1.09	88	KNGZ785
151.0100	4	28	11.78	312	WNRM842	NJ	0.44	345	KEG941
150.8900	10	46	11.64	122	KNDF943	NY	8.48	330	WNVQ907
BEST USEABLE FREQUENCIES - 450 BAND (BASE STATION FREQS)									
451.8000	0	0	135.93	312	WNPQ619	NY	0.87	37	WPPD916
452.9500	0	0	56.75	3	WPMQ955	NY	0.86	85	WPPB524
452.9250	2	1	31.28	49	WPMV844	CT	3.08	96	WPBF230
451.2500	4	18	13.66	285	WPUZ624	NJ	0.93	313	WPPC258
451.2000	4	100	7.24	30	WPRK787	NY	0.93	313	WPPC258
452.9000	2	66	3.08	96	WPBF230	NY	0.79	337	WPMS378
451.8750	11	760	2.65	97	WPMF739	NY	0	156	WPNS794
452.5750	10	1757	1.81	38	WPPH550	NY	0.03	93	WPPV475
452.8250	11	315	1.56	68	WNEA328	NY	0.59	44	WPJZ465
452.4250	16	498	1.31	69	WPMM859	NY	0.47	120	KDB667

Appendix A1

See notes on page A3

REQUENCY (MHz)	# OF CSN	# OF MOBLS	CO-CHAN DIST(mi)	DIR. Deg.	CALL SIGN	STATE	ADJ DIST(mi)	DIR. Deg.	CALL SIGN
ST USEABLE FREQUENCIES - 460 BAND (BASE STATION FREQS)									
460.9750	1	0	32.82	86	KRT259	NY	0.59	67	WSW436
462.9250	5	0	8.17	274	WPNQ353	NJ	0	156	WPNS794
460.6750	14	24	6.55	75	KJX291	NY	3.42	97	WPTD807
460.7250	8	180	6.55	75	WNZJ417	NY	0.57	209	WPTW819
460.8750	10	8	6.55	75	KJX291	NY	3.51	140	WPAK474
464.2000	19	579	3.67	26	WPOG482	NY	0.04	0	WNVF603
460.9500	5	0	8.78	200	WPTW819	NY	39.56	88	WPPD615
464.0250	13	430	2.57	275	WNRO772	NJ	0.27	217	KYQ231
463.7000	16	407	2.05	135	WPPT651	NY	0	156	WPCD538
463.2500	18	468	1.68	81	WNGW768	NY	0.44	42	WSN686
ST USEABLE FREQUENCIES - 800 MHZ BAND									
855.9375	1	0	36.04	300	WPQK799	NJ	1.05	47	KNEH690
858.8375	2	168	27.29	80	KIU751	NY	0.09	53	KNDH643
860.8875	2	0	9.99	246	KNIV727	NJ	1.96	175	KNDH631
856.8875	2	0	9.99	246	KNIV727	NJ	0.08	106	KNDH627
857.8875	2	0	9.99	246	KNIV727	NJ	0.08	106	KNDH635
855.3125	2	0	5.65	167	KNHY619	NY	2.93	200	KNGK513
855.6375	1	0	4.03	175	WPEH546	NY	1.05	47	KNEH690
855.2875	1	0	2.93	200	KNGK513	NY	0.96	91	WNAJ397
855.3375	2	0	2.93	200	WPMJ400	NY	1.05	47	KNEH690
857.8125	1	0	2.93	200	KNIH396	NY	0.47	120	KNIH396

Appendix A2

Appendix A3 See notes on page A3

NOTES:

The above charts represent a sample of frequencies in each band and points out that frequencies are not available for any entity that requires more than one frequency for their communications needs.

The data was obtained through the Communications Engineering Technology data base (now known as Site Safe) using their Autofind Program.

Data was obtained by searching a 50 mile radius of New York City Center with coordinates 40-45-06 / 073-59-39.

A full listing of each band and the results of the search is available in electronic or written form and will be supplied upon request.

Appendix A4

APPENDIX

In order to prevent interference between the proposed land mobile operations on Channel 16 in New York City and the existing television operations of WNEP- TV in Scranton, Pennsylvania on Channel 16 (FCC File Number BLCT-2623) and WPHL-TV in Philadelphia, Pennsylvania on Channel 17 (FCC File Number BLCT- 2611), the proposed land mobile operation will be restricted as follows:
Base station operation is permitted in the five boroughs of New York City and Nassau, Westchester and Suffolk Counties in New York, and Bergen County, New Jersey. Mobile operation is permitted in these counties and boroughs as well as outside these areas provided the distance from the Empire State Building (Geographic Coordinates: 40 <<degrees>> 44' 54" N, 73 <<degrees>> 59' 10" W) does not exceed 48 kilometers (30 miles).

Co-Channel Television Protection

For base stations to be located in the five boroughs that comprise the City of New York and other jurisdictions east of the Hudson River and Kill Van Kull, the maximum effective radiated power (ERP) will be limited to 225 watts at an antenna height of 152.5 meters (500 feet) above average terrain. Adjustment of the permitted power will be allowed provided it is in accordance with the "169 kilometer Distance Separation" entries specified in Table B or prescribed by Figure B of Section 90.309(a)(5) of the FCC Rules.
For base stations to be located west of the Hudson River, the maximum ERP will be limited to the entries specified in Table B or prescribed by Figure B of Section 90.309(a)(5) of the FCC Rules for the actual separation distance between the land mobile base station and the transmitter site of WNEP-TV, Scranton (Geographic Coordinates: 41 <<degrees>> 10' 58" N, 75 <<degrees>> 52' 21" W).
Mobile stations associated with such base stations will be restricted to 100 watts ERP in the area of operation extending eastward from the Hudson River and 10 watts ERP in the area of operation extending westward from the Hudson River. These restrictions offer 40 dB of protection to the Grade B coverage contour of WNEP-TV, Scranton.

SEPARATE STATEMENT OF
COMMISSIONER KEVIN J. MARTIN

Re: Amendment of Parts 2, 73, 74 and 90 of the Commission's Rules to Permit New York Metropolitan Area Public Safety Agencies to use Frequencies at 482-488 MHz, Notice of Proposed Rulemaking, ET Docket No. 03-158 and MB Docket No. 03-159.

I strongly support this proposal to permanently reallocate Channel 16 in New York City to land mobile service for public safety communications. The men and women working for New York's public safety agencies learned first-hand almost two years ago how critical reliable communications networks are in times of crisis. The ability to communicate with other public safety personnel can determine the difference between life and death. Harmful interference and inadequate networks can prevent first-responders from doing their jobs – protecting the people of New York – and can endanger their lives.

Over a year ago, I talked with local government officials and members of the public safety community in New York about what steps the Commission could take to improve their plight. Their primary concern was the need for spectrum in the crowded New York City airspace. In discussing the unique spectrum needs of New York – marked by an exceptionally dense population with a high concentration of tall buildings – they emphasized their reliance on Channel 16. In particular, they asked that their temporary authority to use Channel 16 be made permanent, so that they could continue to make the substantial investment necessary in enhancing their use of this frequency.

I am extremely pleased that the Commission is finally acting on this request. It is my hope that the step we take today will facilitate and accelerate the development, integrity, and coordination of these agencies' communications systems.